

CLAIMS:

What is claimed is:

1 1. A method comprising:
2 receiving content from a host device for transmission via two or more tones in a
3 multicarrier communication channel from two or more antenna(e); and
4 distributing elements of the received content across one or more of the antenna(e) and
5 tone(s) to introduce full-order transmit diversity.

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1 2. A method according to claim 1, wherein the received content is a stream of quadrature
2 amplitude modulation (QAM) symbols, received from the host device, or an application or agent
3 executing thereon.

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1 3. A method according to claim 1, the element of distribution comprising:
2 cyclically disperses elements of the received content across M_t transmit antennas, and a
3 number (N) of multicarrier tones for each of a plurality of Rayleigh fading channel taps (L).

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1 4. A method according to claim 3, wherein the cyclical dispersion of the elements of the
2 received content provides full-order transmit diversity according to $M_t \cdot M_r \cdot L$, where M_r is the
3 number of receive antennae.

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1 5. A method according to claim 4, wherein the cyclic dispersion is a function of delay
2 spread L .

1 6. A method according to claim 4, wherein the cyclic dispersion of the elements is
2 adaptively determined based, at least in part, on an observation of multipath conditions of the
3 channel.

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1 7. A method according to claim 6, wherein the cyclic dispersion is increased as a larger
2 number of frequency blocks (L) where there is a high delay spread.

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1 8. A method according to claim 4, wherein cyclic dispersion is decreased over a fewer
2 number of frequency blocks to mitigate a danger of horizontal wraparound of the elements.

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1 9. A method according to claim 4, wherein a tone delay from antenna to antenna is great
2 than one (1).

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1 10. A method according to claim 9, wherein the tone delay from antenna to antenna is
2 adaptively determined based, at least in part, on the spatial correlation, wherein the more
3 correlated the fading on different antennas, the greater the tone delay from antenna to antenna.

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1 11. A method according to claim 2, wherein the received content are complex symbols that
2 are linear or nonlinear combinations of input QAM symbols.

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1 12. A method according to claim 3, further comprising:
2 performing additional channel processing prior to transmission of the full-order transmit
3 diversity channel to a remote device.

1 13. A method according to claim 12, the additional channel processing comprising one or
2 more of converting dispersed content from a time domain to a frequency domain, introducing a
3 cyclical prefix into the signal stream, and performing front-end radio frequency (RF) processing
4 prior to transmission via one or more of the transmit antenna(e) Mt.

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1 14. A storage medium comprising content which, when executed by an accessing device,
2 causes the device to implement a method according to claim 1.

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1 15. An apparatus comprising:
2 a diversity agent, to receive content from a host device and distribute elements of the
3 received content across one or more of a plurality of transmit antenna(e) and tone(s) of a
4 multicarrier communication channel to generate a transmit signal exhibiting full-order transmit
5 diversity; and
6 a transmitter, responsive to the diversity agent, to transmit the generated transmit signal.

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1 16. An apparatus according to claim 15, wherein the diversity agent cyclically disperses
2 elements of the received content across Mt transmit antennas, and a number (N) of multicarrier
3 tones for each of a plurality of Rayleigh fading channel taps (L) to provide the full-order
4 diversity transmit signal.

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1 17. An apparatus according to claim 15, the transmitter comprising:
2 an inverse discrete Fourier transform (IDFT) element, coupled to the diversity agent, to
3 receive the transmit signal and convert it from a frequency domain to a time domain; and

4 a radio frequency (RF) processing element, coupled with the IDFT element, to transmit

5 the generated transmit signal via a select one or more of a plurality M_t of transmit antennae.

1 18. An apparatus according to claim 15, further comprising:

2 a memory to store content, at least a subset of which is executable content to implement a

3 diversity agent; and

4 control logic, coupled to the memory and the transmitter, to access and execute at least a

5 subset of the content stored in the memory to implement the diversity agent.

1 19. An apparatus according to claim 18, wherein the control logic is a baseband processor.

1 20. An apparatus according to claim 18, wherein the control logic is an applications
2 processor.

1 21. An apparatus according to claim 15, wherein the apparatus is a transceiver.

1 22. A storage medium comprising content which, when executed, causes an accessing
2 machine to implement a diversity agent according to claim 15.

1 23. A system comprising:

2 two or more dipole antennae; and

3 a diversity agent, to receive content from a host device and distribute elements of the

4 received content across one or more of the two or more dipole antennae and tone(s) of a

5 multicarrier communication channel to generate a transmit signal exhibiting full-order transmit
6 diversity.

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1 24. A system according to claim 23, further comprising:

2 a transmitter, coupled between the diversity agent and the dipole antennae, to receive one
3 or more substreams of cyclically distributed content from the diversity agent and complete
4 channel processing prior to transmission of the transmit signal from the dipole antennae.

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1 25. A system according to claim 24, the transmitter comprising:

2 an inverse discrete Fourier transform (IDFT) element, coupled to the diversity agent, to
3 receive the one or more substreams of cyclically distributed content in a frequency domain and
4 convert it to a time domain representation thereof; and
5 a radio frequency (RF) processing element, coupled to the IDFT element, to receive the
6 time domain representation of the cyclically distributed content and amplify it for transmission
7 from the dipole antennae.

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1 26. A system according to claim 25, the transmitter further comprising:

2 a cyclical prefix insertion element, coupled between the IDFT element and the RF
3 processing element, to introduce cyclical prefix into the time domain representation of the
4 generated transmit signal.

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1 27. A system according to claim 25, wherein the system is a transceiver.